IBM *@server* **BladeCenter T:
The integrated platform for
voice, services and more**

By Bruce Anthony
Distinguished Engineer and CTO
IBM Telecommunication Servers
IBM Systems Group

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Executive summary

A new day is dawning in the telecommunications marketplace, one that's marked by anticipation of growth driven by new services opportunities. Companies that are agile and innovative in their products and services and rapidly adaptive to exploit industrywide transformations will find themselves in leadership positions with profitable growth. The changes facing the industry represent a new paradigm and involve fundamental shifts of dramatic proportions:

• Convergence of not only voice and data networks, but of the architectures, hardware, operating systems and middleware between the technologies of enterprise and telecom
• Transitioning from unique in-house development, low volumes and high costs to robust, integrated commercial products and technology
• Exploiting an open and robust Carrier Grade Linux in lieu of disparate, legacy UNIX® software
• Supporting new revenue-generating services, rapidly driven by application software development and leveraging common componentry
• Simplifying and consolidating the computing infrastructure across the telecom spectrum

Several key trends shaping the industry include operational flexibility; commercial technology utilization; exploitation of open Linux; the shift to software and services; and simplification and consolidation of computing resources.

BladeCenter T will transform the way telecommunication services and products are created, deployed, operated and maintained.

IBM embraces and extends this new paradigm with the IBM @server BladeCenter T – the latest member of the industry-leading BladeCenter family of servers. BladeCenter T will transform the way telecommunication services and products are created, deployed, operated and maintained. It marries the power, agility, innovation and cost structures of enterprise computing with the ruggedness and reliability demands of the telecom marketplace to launch the new era of on demand, next generation communications.

BladeCenter T represents the convergence of voice and data networks, architectures, hardware, operating systems and middleware – yielding a new operational flexibility. Tightly integrated with Linux, BladeCenter T consists of telecom-enabled robust, high-volume commercial servers, storage and networking.

By leveraging the investment IBM has made in developing a robust telecom platform, solution providers can drive new services and revenue growth by focusing their investments and resources on developing new business models and common application delivery systems. BladeCenter T features industry-leading management, performance and density capabilities; these enable simpler operation and consolidation of computing resources into ever more affordable spaces.

The fully integrated BladeCenter T server, storage and networking offering can help reduce time-to-market for the introduction of new services, while dramatically lowering development and operational costs. BladeCenter T equips network solutions and service providers – across both the enterprise and telecom markets – with a new generation of tools to capture new markets quickly and more cost-effectively. In addition, it provides the freedom to attract new customers by enhancing companies' ability to create and manage mission-critical communications services, in network or out.

BladeCenter family: Ideal for next generation applications

Many next generation communications applications are pushing the envelope and demand the fastest processors available in the industry. The BladeCenter family is uniquely designed to follow the performance curves for leading processors in the industry from Intel,® AMD and IBM in both 32- and 64-bit computing. The power and cooling demands of these faster processors are significant, and BladeCenter and BladeCenter T are built not only for today's processor demands, but for tomorrow's as well.

BladeCenter T is designed to follow the processor roadmaps and enable them to be installed in the chassis for several years to come. Competing technologies like Advanced TCA (ATCA) and Compact PCI (cPCI) cannot handle the power and cooling requirements and, therefore, cannot keep up with users' demands for faster processing and computing horsepower.

Today's communication environments require flexibility and scalability to address rapidly changing market conditions. BladeCenter and BladeCenter T provide telecoms with the agility they require through the use of hot-pluggable blade servers, which may be upgraded to incorporate technology changes – in seconds, not hours or days.

Complete redundancy in the chassis enables continuous operation, while hot pluggability permits scheduled replacement of failing components when necessary. Design and certification to NEBS 3 and ETSI standards affords deep robustness, which, coupled with appropriate software, can yield *the kind of availability telecom customers expect.*

The BladeCenter family is uniquely designed to follow the performance curves for leading processors in the industry.

Introduction

The telecommunications industry is emerging from the recent downturn with a strong focus on increasing revenue and decreasing costs as keys to profitability for shareholders. These forces are driving major transformations and are changing the rules. How well and how quickly a company embraces these new rules will have a major impact on growth and profitability.

Accelerated growth comes from delivering new products and services – which propel profit increases – faster and better than competitors. Having the right foundation to create these products and services makes the difference between leadership and extinction. As we learned from the dot-com bubble, growth must be tied to profitability. And controlling costs and focusing scarce investment dollars appropriately drives profitability.

Key trends shaping the industry

The new day in the telecom industry features several key trends – which build upon each other to fulfill the promise of growth – that are reshaping the telecom industry. Harnessing their power will enable companies to demonstrate and reap the rewards of leadership.
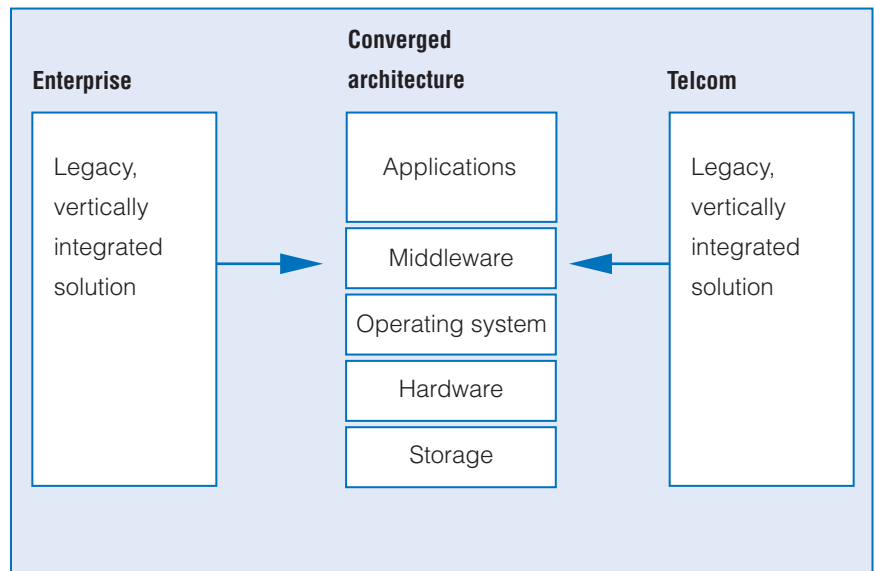
Operational flexibility

For many years the word "convergence" has meant the combination of voice and data traffic over a single network infrastructure. While networking is still a vital aspect of convergence, there is a whole new realm of convergence appearing that spreads across the solution stack. The enterprise market evolved from proprietary, vertically integrated silos for solutions to a new world of standardized servers, operating systems, networking, storage and middleware to support broad application development and deployment with standard componentry.

True operational flexibility yields the freedom to combine and deploy technology where it best fits.

The telecom infrastructure is undergoing a similar transformation. Vertically integrated silos are giving way to new solutions constructed around the same architectural framework as the enterprise. As this trend accelerates, the distinction between enterprise and telecom is blurring and will eventually be erased. As companies move to exploit the greater combined investments from both marketplaces, new services harnessing this innovation explosion will be delivered quickly and at significantly reduced cost. True operational flexibility yields the freedom to combine and deploy technology where it best fits.

Operational flexibility

| Enterprise	Converged architecture	Telcom
Legacy, vertically integrated solution	Applications Middleware Operating system Hardware Storage	Legacy, vertically integrated solution

Commercial technology utilization

The legacy of the telecom industry is one of vertical integration, highly specialized in-house development and extraordinary costs. As the trend towards operational flexibility becomes more prominent in the telecom industry, reliability levels for commercial solutions will also increase due to the Internet-driven phenomenon of 24x7 computing. Furthermore, the extreme cost pressures of the past few years have reshaped the face of the development and operations community in the telecom market.

As a result, utilizing commercially available technology has become a critical success factor for the creation of new solutions in the telecom market. Solution providers can no longer afford to focus a significant portion of their investments and energies re-creating basic infrastructure platforms that are the foundation for revenue-generating applications. As commercial technology becomes more reliable and scalable, those telecoms leveraging its availability will become industry leaders.

End customer value shift
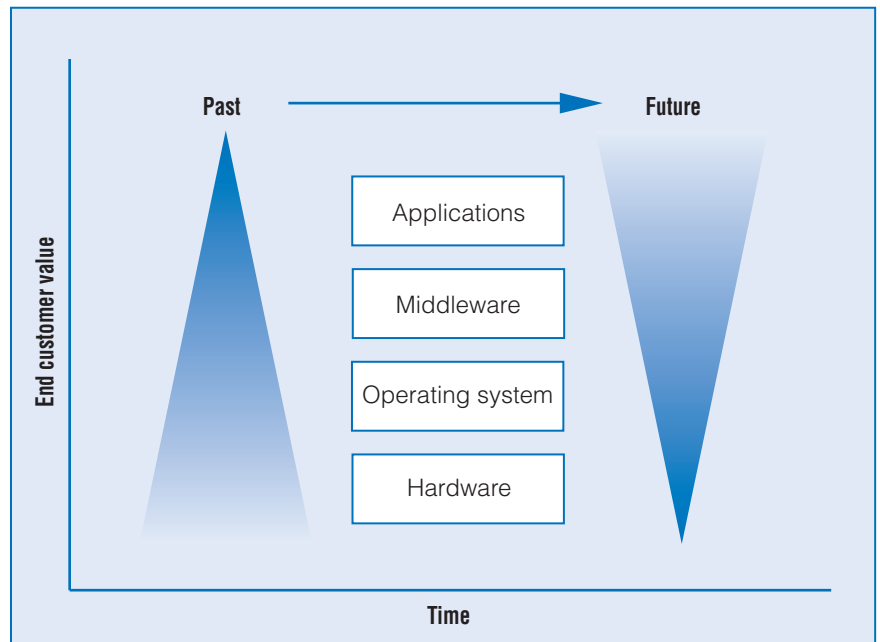
Exploitation of open Linux

Linux has become the premier environment for application development in the enterprise and telecom markets. Its leadership may be attributed to its ability to leverage open source development and speed of execution for adopting change – while providing freedom and flexibility for application deployment.

Over the past several years, IBM and others in the Open Source Development Lab (OSDL) Carrier Grade Linux project have made investments into enhancing Linux – changing the question from "if" Linux to "How fast can we be in market." Every major solution provider in the industry has either begun to develop or ship applications using Linux.

Shift to software and services

Software and services are fundamental to the creation of new revenue-producing offerings. With operational flexibility yielding a standardized architecture for application creation, providers can quickly assemble a new generation of applications. These can go to market with a focus on application and service functionality rather than investing dollars in infrastructure plumbing – consisting of specialized hardware and software. The faster solution providers make this transition, the greater their ability to lead in the marketplace. And the faster service providers deploy these solutions, the faster their customer and revenue base can grow.

Simplification and consolidation of computing resources

The preceding trends will drive the deployment of greater numbers of servers into the network. Like the enterprise world – which discovered that many unrelated servers can create a costly, complex management nightmare – the telecom industry must begin to establish structures that simplify managing and consolidating applications to higher points of control and density.

Taken by themselves, each of these trends denotes a major change in the way business is conducted in the telecom industry. Taken as a whole, the magnitude of the change is unprecedented. The leaders in this new world will be those companies that are agile and responsive to this change, thriving on innovation in products and services, while rapidly transforming themselves to leverage these trends.

IBM's leadership plays: Enabling companies to exploit the trends

Against this backdrop of radical changes throughout the telecom industry, IBM is investing to drive leadership technology in the marketplace, enabling companies to grow their businesses by exploiting these trends. IBM has three fundamental investment streams designed to accelerate this evolution:

- Creating industry-leading blade server technology in the BladeCenter family of products
- Growing Linux through active participation in the open standards community
- Driving the shift to software and services via our middleware, Carrier Grade Open Framework Standards activity and Integrated Platform for Telecommunications offerings

Since its introduction in December of 2002, IBM @server BladeCenter has grown to become the number one leader in the blade server marketplace with 38 percent unit share and 43.5 percent revenue share (per IDC results, 4Q03). The adoption of BladeCenter has exceeded any previous server release in the history of IBM.

IBM @server BladeCenter: Decreasing complexity and increasing manageability
BladeCenter is a cost-effective, highly dense, highly scalable server chassis for application workloads. It's ideal for Citrix, IBM WebSphere®, Lotus® Notes®, Microsoft® Exchange and Linux cluster usage. BladeCenter uses hot-swap blade servers, with the individual blades arranged in the chassis much like books on a bookshelf.

This design offers up to 168 processors in one 42U rack – twice the density of comparable 1U rack servers. The chassis supports hot swappability and redundancy for critical system components such as fans, power supplies, I/O switches and management modules, in addition to a midplane employing redundant components.

BladeCenter also integrates functionality that traditionally exists outside the server, decreasing complexity and increasing manageability. For example, BladeCenter includes a management module and supports the addition of optional modules, such as Gigabit Ethernet and Fibre Channel switches that

BladeCenter T builds on the strength, reliability and serviceability advantages of the BladeCenter offering.

would normally use additional rack space, and require a second management module. BladeCenter includes four switch bays that support various combinations of Gigabit Ethernet switches, Fibre Channel switches and Optical Pass-thru Modules (OPMs).

The modular design of BladeCenter makes upgrading server capacity a simple matter of plugging in a new blade server – or swapping one out for service. It also greatly simplifies cable management and lowers cabling costs by eliminating the need for each blade to use its own cabling infrastructure. An organization can achieve significant cost savings by eliminating duplicate cabinets, power supplies, fans, KVM and Ethernet cabling, and other components – normally included with a server – by sharing them in a single blade server chassis.
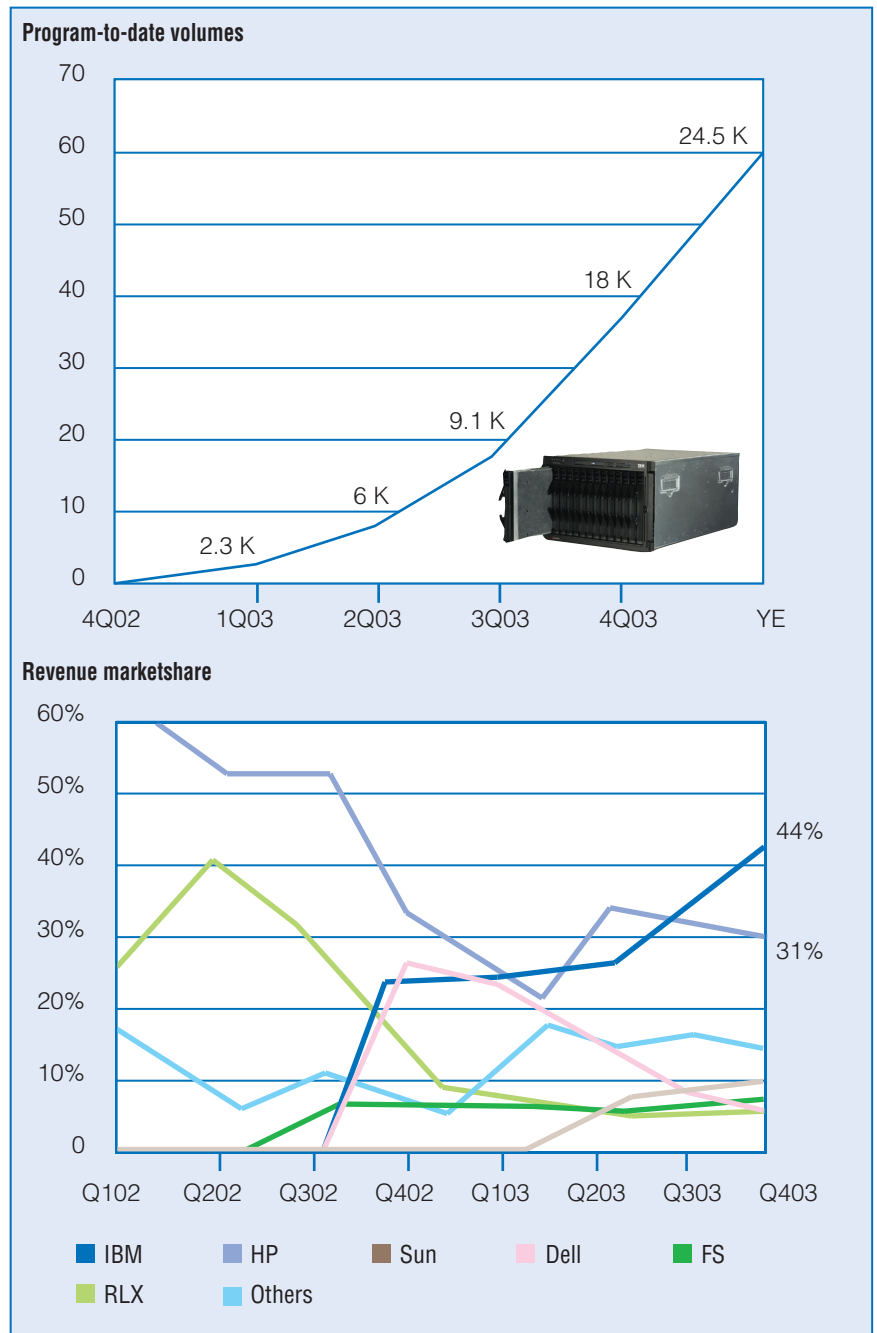
BladeCenter T: Building on the strengths of BladeCenter
IBM extends the market-leading BladeCenter family with a new chassis that delivers on the promise of operational flexibility: The IBM @server BladeCenter T. BladeCenter T builds on the strength, reliability and serviceability advantages of the BladeCenter offering – with features such as fault-tolerant connectivity, integrated storage networking, hot-swappable redundant power supply and cooling, and built-in system management resources.

IBM has further ruggedized and enhanced the BladeCenter offering to fully meet the needs of the core network environment. Unique features such as a telecom alarm panel, shorter chassis depth to fit in 600mm racks, and air input filtering are designed to:
• Increase network reliability
• Ease management burden
• Minimize deployment cost
• Easily manage tough deployment conditions as a new platform for solution creation

IBM @server **BladeCenter in 2003**

Program-to-date volumes

24.5 K

18 K

9.1 K

6 K

2.3 K

4Q02 1Q03 2Q03 3Q03 4Q03 YE

Revenue marketshare

44%

31%

Q102 Q202 Q302 Q402 Q103 Q203 Q303 Q403

■ IBM   ■ HP   ■ Sun   ■ Dell   ■ FS
■ RLX   ■ Others

IBM extends #1 share position in 4Q; share gains exceeded all previous
server releases. (IDC results, 4Q03)

A value-enhancing, common architecture

Leveraging the *same* blades, networking and storage switches as BladeCenter is at the heart of the BladeCenter T strategy. This approach offers organizations tremendous benefits, including:

- *Volume economics from the enterprise marketplace:* Higher volumes drive out cost from the solution for both enterprise and telecom deployment.

- *Application extension:* Organizations can create applications in one market and quickly replicate them in another. Previously "trapped" assets can now expand the value they bring to the business, and future application investments yield greater benefit as they address a wider audience.

- *Accelerating delivery of services to market with greater flexibility of deployment:* This operational flexibility is especially important in a packet communications environment – where previous restrictions regarding residency of network elements and applications no longer apply.

- *Greater availability of solutions and components:* A solution provider would ordinarily invest in new technology, recovering investments against its own product stream. Instead, a broader third-party ecosystem of suppliers – attracted by the size of the market opportunity – can speculatively develop new capabilities to enhance the platform across the marketplace.

Leveraging COTS technologies

Attempts have been made in the past to leverage commercial-off-the-shelf (COTS) technologies in the telecom marketplace. Although these have achieved varying degrees of success, all failed to deliver economic value because of a vendor's desire to differentiate the hardware solution from other suppliers. The end result was divided volumes and rising development expenses. Consequently, true economy of scale was never achieved.

BladeCenter T is the *only platform* in the market that truly delivers on the promise of COTS by using exactly the same server blades and switches as the enterprise market with a rich ecosystem of available third-party, plug-and-play enhancements. Tapping into order-of-magnitude larger volumes leverages COTS in ways that telecom-only solutions cannot.

BladeCenter extends to telcom

Common blades and switches

BladeCenter   BladeCenter T
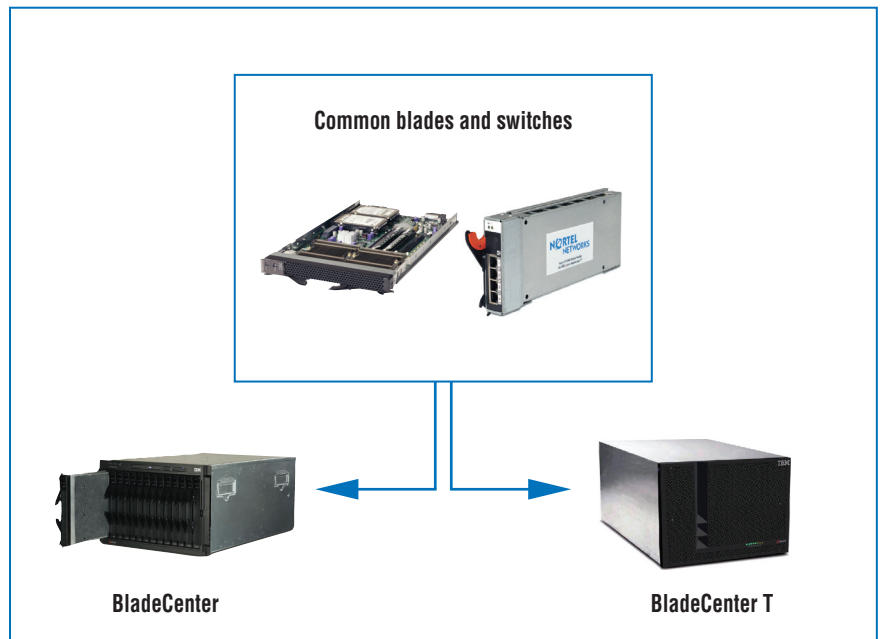
Linux: IBM commitment since 1997

IBM has been committed to Linux since 1997, when the company began enabling its full range of hardware, software and services offerings. IBM contributes substantial resources to the open source community and has made significant contributions to Linux itself, especially in the area of 64-bit support.

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During 2001 alone, IBM invested over one billion dollars in hardware, software and services in Linux. The company is currently engaged with more than 2,500 Linux customers worldwide and more than 5,000 IBM employees are working worldwide in Porting Centers and Research, services and development labs dedicated to Linux. With assistance from IBM, over 4,000 ISV applications have been enabled for Linux.

IBM has several major initiatives to support Linux within the company as well as for customers:

Linux Technology Center (LTC): IBM is working with the open source community on a variety of projects to enhance the value of Linux for customers. The LTC has over 350 people devoted to developing and improving open source. IBM is also participating in several industry-led efforts, such as the Linux Standard Base, the Free Standards Group, the Open Source Development Network, and the Open Source Development Lab (OSDL).

Linux for Service Provider Lab (LSPL): IBM supports the lab to make technical resources and infrastructure available to telecommunications partners and customers. The LSPL provides partners and customers with engineering and technical assistance for application porting and validation in a real network environment.

Through the Linux Technology & Solutions Center (LTSC), IBM collaborates across the board with the open source community on a wide range of enhancements to Linux. Working as part of the open source community, the LTSC accelerates the development of Linux as an industrial-strength operating system for commercial applications. This worldwide team of more than 250 IBM programmers also serves as a center of Linux competency within IBM. The LTSC provides enhancements to Linux ranging from enterprise RAS and scalability to security, Journaled File System, logical volume management, carrier-grade enhancements, next-generation networking and many other projects.

Eleven Porting Centers for Linux, located globally, provide resources to assist software providers in migrating applications to Linux. Dedicated Linux technical consultants are available to provide hands-on assistance, and many of the centers offer IBM ServerProven® validation on Linux. IBM has also established Linux Innovation Centers in several emerging countries (China, Russia, India) to help customers and partners build and go to market with IBM Linux-based solutions. IBM plans to open additional centers in 2004.

IBM integrated solutions for the telecommunications industry
IBM has recognized three key factors challenging today's telecom service providers, including:
• Curtailing increasing costs of network operation
• Decreasing the complexity of introducing change into a
  network infrastructure
• Reducing the cycle time of implementing new packet-based services
  to meet growing customer demands

IBM is committed to delivering standards-based solutions tailored to the telecommunication market. The goal of these specialized solutions is to improve customer choice, flexibility, interoperability and return on investment while helping decrease risk.

The Carrier Grade Open Framework (CGOF)
IBM has been working with a number of companies in the industry to create the Carrier Grade Open Framework (CGOF) to address the challenges of curtailing network-operation costs, decreasing network infrastructure complexity, and reducing time-to-market for new packet-based services. CGOF is the foundation for a new platform of hardware, operating system, middleware and applications that enables the rapid creation of new voice applications and more.

The Carrier Grade Open Framework (CGOF) Reference Implementation
In January 2004, IBM announced the immediate availability of a new Linux-based deployment offering, the Carrier Grade Open Framework (CGOF) Reference Implementation. This new platform, which includes CGOF-compliant hardware, middleware components and services, is designed to address many of the obstacles facing telecom service providers when introducing network services.

The CGOF Reference Implementation is available through IBM Global Services. The offering includes hardware, software and a set of utilities, tools and documents to allow rapid technology deployment of high-availability solutions. The Reference Implementation will be available on BladeCenter and BladeCenter T, and will address a telecom's need to reduce costs and time-to-market.

Integrated Platform for Telecommunications (IPT)
In 2004, IBM intends to further its commitment to the telecommunications industry by introducing a modular, CGOF-compliant product offering: the IBM Integrated Platform for Telecommunications (IPT). The IPT offering will include a variety of IBM systems including BladeCenter and the new BladeCenter T, which will also be available later this year.

IBM also plans to offer expanded software solutions – including IBM Director for systems management, IBM middleware and services – that address both the NGN and telecommunications back-office requirements support for Linux with OSDL-specified Carrier Grade Linux features. These integrated tools will provide telecoms with the ability to develop and deploy applications faster, while improving utilization of network management resources.

BladeCenter T highlights

BladeCenter T is a robust, highly available server, designed to integrate the latest server processors, storage and networking technology into the central office.

- BladeCenter T runs the same high-performance blades available in BladeCenter providing application portability, compatibility, scalability and investment protection.
  - *HS20: Intel 32-bit two-way server blade with 2.4GHz processors*
  - *HS40: The highest scalability of Symmetric Multi-Processing servers with four-way Intel processors available on a blade. This offers a tremendous platform to support next generation network database applications such as Home Location Registry.*
  - *JS20: Dual IBM 64-bit Power 4 processors on a blade. Coupled with Linux, this blade offers the industry's premier 64-bit processor and operating system in a BladeCenter chassis – enabling migration of many legacy UNIX applications to Linux and BladeCenter*

- BladeCenter T is compliant with the NEBS 3 and ETSI core network specifications and has a longer marketing and support lifetime commensurate with the telecom environment.

- BladeCenter T offers the highest density of computing available for the central office environment with 80 server processors per 42U high, 600mm deep rack. Because office space is a limited and precious commodity, higher density translates into greater capability or customers supported in the same space. And additional customers and functionality in the same space yields increased profits, and reduced cost as the company grows.

- BladeCenter T has four integrated networking switch modules with two dedicated to the integrated Gigabit Ethernet networks and two featuring positions for support of either additional Gigabit Ethernet, Fiber Channel Storage or other high-speed networking fabrics. Integrated networking provides the following benefits:
  - *Easier to install and maintain with less cabling*
  - *Lower total cost of ownership for managing the servers and networking by incorporating (under a single tool) all the aspects needed for chassis operations*
  - *Support for different protocols and media, allowing configuration flexibility*

- BladeCenter T is fully redundant in the power supplies, cooling, switching and management of the chassis, enabling telecoms to develop and deploy highly reliable application infrastructures. The BladeCenter T chassis management modules govern the installation, operation, alarming and management of the chassis and blades. These modules are highly integrated into the IBM Director software infrastructure, providing self-healing and self-diagnosing capabilities necessary to enhance system and network resiliency.

- IBM Director provides complete management of the hardware and firmware of the chassis and also drives software distribution and upgrades. Director can manage thousands of blades and chassis across a central office, data center, or the planet – simplifying management by a factor of two while *doubling* the density with traditional, standalone rack servers.

*BladeCenter T fully supports
the IBM on demand strategy and
offers a number of integration
and infrastructure simplification
options for innovative deploy-
ment and financial models.*

• BladeCenter T is fully integrated with Carrier Grade Linux (CGL) and will be available with preloaded distributions from the major Linux vendors. IBM's world-class Linux team is fully engaged in development, integration, service and support of Linux, and Linux applications for telecom on the BladeCenter T. IBM's support of CGL translates into a reliable platform upon which providers can build applications, spending less time on building and integrating a server environment. IBM helps ensure that Linux works superbly on BladeCenter T – helping customers speed their applications' time-to-market.

• BladeCenter T fully supports the IBM on demand strategy and offers a number of integration and infrastructure simplification options for innovative deployment and financial models. These capabilities enable telecoms to create an on demand infrastructure around BladeCenter and BladeCenter T to achieve enhanced business flexibility, while reducing infrastructure complexity.

– *This infrastructure will enable providers to, in turn, extend on demand services and solutions to their customers. The power of operational flexibility means solutions can be deployed across the central office, data center or customer premise with a single application code base.*

– *On demand businesses continue to derive greater value from the network and will require tighter integration between servers, storage and networking. BladeCenter and BladeCenter T are the perfect platforms to enable this growth into new services areas for providers.*

– *Providers are in a unique position to exploit the on demand transformation as it accelerates. With their long history of hosted offerings and a utility model for communications, coupled with the operational flexibility that BladeCenter and BladeCenter T offer, providers can lead the industry and their customers to the on demand world.*

BladeCenter Alliance: Enabling a broad range of investment and functionality in the BladeCenter ecosystem

IBM's industry-leading blade server marketshare is growing at 10 times the rate of our closest competitor; BladeCenter is gaining market acceptance by enterprises seeking a new price/performance value proposition. To accelerate total solution deployment, IBM has established the BladeCenter Alliance, which fosters and supports a new ecosystem of hardware, software and middleware suppliers.

IBM's industry-leading blade server marketshare is growing at 10 times the rate of our closest competitor.

By joining the BladeCenter Alliance, companies can leverage IBM's extensive partnership experience and technology relationships while integrating networking, storage and server workloads on BladeCenter. IBM has engaged with organizations – from a variety of disciplines – who rely on BladeCenter architecture to add value to *their* clients' solutions.

IBM's alliance partners build blades that extend the capabilities of BladeCenter into new markets. Since 2002, over 200 companies have joined the Alliance program, with these partners driving new, leading-edge solutions to market. Members of the Alliance range across a wide spectrum of companies and industries. The Alliance program educates partners about BladeCenter technologies and how to integrate unique value-creating enhancements based on the core strengths of their technology.

The BladeCenter Alliance program is designed to enable a broad range of investment and functionality in the BladeCenter ecosystem while preserving the integration and the plug-n-play simplicity that is the hallmark of the BladeCenter family. A major goal of the Alliance is to quickly drive the breadth of functions available on BladeCenter to a host of wide-range solutions, including an ever-expanding circle of partners and technologies.

Partners are encouraged to focus their investments in unique areas, which will extend the capabilities of BladeCenter. And BladeCenter T extends the application areas in which partners can focus their investments. By leveraging the unique operational flexibility of the BladeCenter family, BladeCenter T offers a significantly broader marketplace for technologies, enabling companies to find new revenue potential enterprisewide.

IBM provides documentation and assistance as needed to insure that partners are able to effectively integrate their technology into the BladeCenter infrastructure. With this rich portfolio of existing blade partners, BladeCenter provides an excellent platform for media servers, applications servers, call agents, feature services, new service delivery portals, and the new generation of Operations Support Systems (OSS).

BladeCenter and the competitive landscape

BladeCenter and BladeCenter T are unique in today's market as the only platforms delivering operational flexibility – spanning both the enterprise and telecom markets – with a common set of components. BladeCenter and BladeCenter T have been designed to synergistically coexist with other telecom industry architectures such as Advanced TCA (ATCA). This is especially important for telecoms that have invested in ATCA technology, for transport plane network elements, and want to leverage BladeCenter and BladeCenter T to achieve economies of scale for compute-intensive operations.

BladeCenter and BladeCenter T afford the flexibility of developing solutions regardless of server location.

IBM's BladeCenter family offers an excellent transformation path for migration of legacy technologies, while addressing the high costs of in-house development and support. To be successful, a telecom service provider needs to actively participate in the corporate/enterprise networking solutions model. BladeCenter and BladeCenter T afford the flexibility of developing solutions regardless of server location – whether it is in the carrier's office or on the customer's premise.

The current practice in telecom is a combination of proprietary designs and utilization of standards-based products around the Compact PCI (cPCI) and the future standard of ATCA. These products are highly focused around the need to attach to hundreds of I/O lines of legacy telecom protocols like E1/T1, ATM, SS7 etc. With IP-based telephony growth and the introduction of servers and heavier processing demands, the cPCI chassis is simply unable to keep up.

Instead of trying to make one size fit all, the philosophy of BladeCenter T is to form bridges to other platforms.

Compute-centric versus I/O-centric platforms

ATCA was developed as the result of attempts to define a new standard that blended the I/O-centric nature of cPCI with enhancements to permit greater processing power. While it satisfactorily addressed certain highly I/O-centric issues, ATCA is limited in its ability to cool the latest performance processors or ride the future processor curves. A very real trade-off must be made between compute-centric platforms and I/O-centric platforms. Heavy I/O capability means compromise in cooling the airflows needed for heavy computing.

ATCA attempted to address both I/O growth and increased computing performance in a single chassis definition. The result is a design that is costly for high line count, low-speed I/O, while lacking the cooling capacity necessary to support heavily compute-centric applications. Optimized solutions require optimized elements: One size does not fit all needs.

Solution providers are spending a significant amount of time creating basic infrastructure instead of focusing on developing new applications that will become the foundation for revenue-generating services offered by telecoms. Crafted by many of the same members that originally created cPCI, ATCA encounters similar difficulties. ATCA forces investment in infrastructure instead of applications, compelling solution providers to re-create the wheel of infrastructure integration multiple times.

BladeCenter T extends the application areas in which partners can focus their investments.

An integrated, turnkey server platform

BladeCenter T is an integrated, turnkey server platform. The servers, storage, networking, operating system and middleware are preintegrated in IBM's and partners' labs – so the solution providers don't have to. It resets the value chain so that the companies with the foresight to adopt the technology can invest in differentiation instead of plumbing. And it minimizes duplicate investments for the same infrastructure elements by bringing all to the same basic platform.

BladeCenter T is optimized for compute-centric applications with internally integrated airflow and cooling structures. This means that BladeCenter T is less able to handle heavy legacy I/O needs. Instead of trying to make one size fit all, the philosophy of BladeCenter T is to form bridges to other platforms more capable in the I/O area.

Optimized solutions using optimized elements

BladeCenter T can bridge to cPCI and ATCA solutions through standard IP interfaces or, with third-party products, can plug directly in to cPCI chassis and replace the underpowered CPUs with server blades an order of magnitude larger. This permits an optimal solution with BladeCenter T powering the new compute-centric applications; existing chassis are reused to handle legacy I/O.

BladeCenter T delivers leadership compute performance and scalability to address the ever-growing appetite of numerous voice and services applications – delivering new value in the telecom marketplace. The BladeCenter HS20, JS20 and HS40 processing blades provide unique industry-leading performance and will continue to follow the growth of processor performance enabled by the robust design of the BladeCenter T chassis.

The road ahead: Dramatic growth…profitable transformation

IBM leads the marketplace today with BladeCenter and BladeCenter T extends that leadership and advantage to customers in the telecom industry. The new operational flexibility of the expanded BladeCenter family enables the creation of new services and offerings faster than ever before at less development and validation expense, with a broader reach of potential customers and deployment possibilities.

IBM believes the telecom marketplace is ready for change, to move beyond the arbitrary and limiting silos of the past and into new models and services that will bring the growth shareholders are demanding. IBM is working to integrate all of the key elements together in a cohesive platform to enable providers to focus on applications and services. BladeCenter T is the next step in the IBM journey to lead the marketplace in innovation.

Come join us.

Find out more

For more information on BladeCenter T directions, products and services, visit our Web site at **ibm.com**/servers/eserver/bladecenter

Information about Linux
IBM provides continued support and participation throughout the world. You can learn more about this support and IBM commitment to Linux at the following Web sites:

- The IBM Linux portal for a general point of entry into IBM and Linux: **ibm.com**/linux
- IBM Linux Technology Center (LTC): **ibm.com**/linux/ltc
- IBM Solution Partnership Centers: www.developer.**ibm.com**/spc/index.html
- IBM Linux support line: **ibm.com**/services/e-business/linux_8.html
- The Open Source Development Lab: www.osdl.org/
- IBM developerWorks Linux: www-106.**ibm.com**/developerworks/linux/
- IBM alphaWorks: www.alphaworks.**ibm.com**/

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